

# CUTTING EDGE

[www.DFWVetSurgeons.com](http://www.DFWVetSurgeons.com)

Surgeons at the DVSC have performed neurosurgical procedures for IV disc

The Dallas Veterinary Surgery Center (DVSC) was initially founded in 1986, principally as a neurosurgical referral practice, with greater than 50% of the total case load being neurosurgical. Throughout the years we have always strived to be on the "cutting-edge" of neurosurgical techniques and diagnostic procedures. Our surgeons have been involved with the development and advancement of several neurosurgical techniques currently in use by other surgeons across the country.

In our continued commitment to provide the latest and most advanced neurosurgical techniques available, the DVSC has acquired a holmium: YAG laser solely to perform prophylactic percutaneous minimally invasive laser disc ablation.

The most common neurosurgical diseases seen at the DVSC are cervical and thoracolumbar disc herniation, lumbosacral compression, spinal fracture/luxations, cervical vertebral instability (Wobblers disease) and atlanto-axial

subluxation. Following is a brief insight into our recommendations for one of the most commonly encountered neuro-

## 20 YEARS OF NEUROSURGERY AT THE DVSC

surgical diseases.

### Intervertebral IV Disc Herniation

Without a doubt, the most common neurosurgical condition presented to veterinarians is IV disc herniation. Herniated discs occur between C2 – C7 and T10 – L5, with C2 – C3 and T12 – T13 being the most common. Chondrodystrophic breeds (Dachshunds, Cocker Spaniels, Lhasa Apsos, etc.) represent the majority of these patients. However, IV disc herniation can occur in almost any breed—even in cats. Diseases such as fibrocartilaginous emboli (FCE), meningitis, and neoplasia can mimic the symptoms of disc herniation and must be ruled out during the diagnostic work-up.

In years past, patients exhibiting pain and/or mild loss of motor function were commonly managed conservatively with cage confinement, steroids, muscle relaxers and pain medications.

*continued on page 2 . . .*

herniation, lumbosacral disease, Wobblers syndrome, spinal fractures/luxations and atlanto-axial subluxations for over 20 years.

The DVSC was the first referral practice in north Texas to routinely use MRI and CT for the diagnosis of intervertebral disc disease. We are also the only veterinary referral center in the DFW metroplex that has intra-operative fluoroscopic capabilities. Fluoroscopy is routinely used to aid in the safe placement of implants (pins, screws, wires) during orthopedic and neurologic surgeries. Intra-operative fluoroscopy significantly reduces the risks associated with screw and pin placement in neurosurgical procedures such as spinal fusions and spinal fracture/luxations. Minimally invasive approaches to the spine are also possible with intra-operative fluoroscopy, which reduce post-operative complications and speed recovery. The DVSC is so convinced that intra-operative fluoroscopy improves the diagnosis and management of numerous neurosurgical diseases that we are adding a second large cross-table fluoroscopy unit with a radiolucent operating table.

# DVSC

The highest quality surgical care for the well-being of your pet.

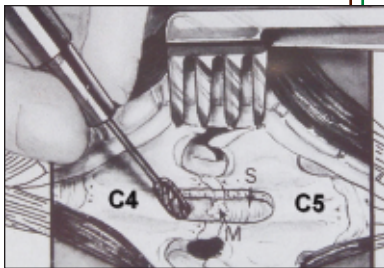
**After-Hours Emergency Pager**

214.246.2819 or 214.289.3215

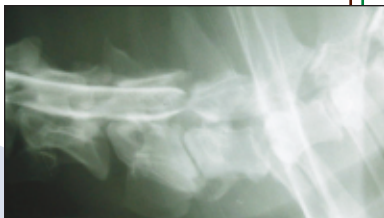
## Symptoms of IV Disc Herniation

Most patients affected by a disc herniation will present with one of the following scenarios:

- ✓ Neck/back pain without neurological deficits
- ✓ Neck/back pain with proprioception deficits (knuckling of paws), and uncoordinated motor function (ataxia or paresis)
- ✓ Proprioception deficits/paresis without obvious neck or back pain
- ✓ Neck/back pain, no motor function (paralysis) with deep pain present to the distal extremities
- ✓ Paralysis with no obvious deep pain to the distal extremities



Above: Ventral slot.  
Below: Cervical myelogram.



Even if these patients improved initially, many would have some recurrence of symptoms or worsening of neurological function at a future time. Unfortunately, if the time interval between episodes is more than a few months, an acute disc herniation, with a very favorable surgical outcome, can become a chronic herniation with a more guarded outcome.

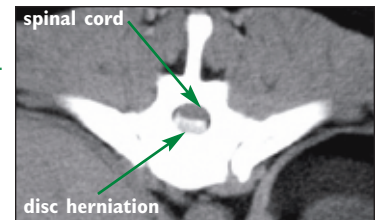
An acutely herniated nucleus is soft and even putty like. Over time it becomes fibrous or even osseous and potentially adherent to the dura of the spinal cord and the floor of adjacent vertebra. Attempts to remove a chronic disc herniation is more challenging, has a higher potential to worsen neurological symptoms and can result in permanent deficits. **Therefore, over the past 10 years, the general philosophy as to when to pursue advanced spinal imaging and potential neurosurgical intervention has dramatically changed!**

Diagnostic spinal imaging techniques used to diagnose disc herniation include myelogram, CT scan or MRI. Plain film radiography is useful to rule out other diseases such as bony neoplasia, fractures, luxations and discospondylitis. However, plain radiographs cannot be relied upon to diagnose an intervertebral disc herniation or to plan surgical intervention.

MRI is a very useful tool to diagnose disc disease; however it is more expensive than other comparable diagnostic imaging techniques such as CT scan or myelography. In addition, MRI typically requires transport to specialized imaging centers.

Some imaging centers do not employ surgeons; therefore the patient must be transported to another facility for surgery

Right: CT of disc herniation.



necessitating another anesthetic event. **Therefore, myelography and CT scan are still the most widely accepted, practical, and cost effective imaging technique used in veterinary medicine.**

MRI is generally reserved for cases where CT/myelogram is inconclusive or for suspected intramedullary spinal cord tumors, lumbosacral disease, brachial plexus neoplasia or primary brain abnormalities.

In chondrodystrophic breeds, axial images by computed tomography (CT) will identify the herniated nucleus in the majority of cases, without need for positive contrast material. This makes the study safer to the patient and less costly to the client. In non-chondrodystrophic breeds an injection of radiographic contrast media into the subarachnoid space (myelogram) followed by a CT may be necessary.

**CT imaging offers diagnostic accuracy comparable to an MRI but at a fraction of the cost. The surgeons at the DVSC are convinced of the diagnostic benefits of CT for management of neurosurgical diseases, and we are preparing to add a second helical CT to our practices.**

The most common surgical procedure used to manage IV disc herniation is either a ventral cervical slot for C2-T1 disc herniation or hemilaminectomy in the thoracolumbar spine. Occasionally a dorsal laminectomy or a hemilaminectomy is performed for a lateralized "foraminal" disc rupture in the cervical region.

**The prognosis for regaining normal or near-normal motor function after**

The DVSC was the first referral neurosurgical center in north Texas to use helical CT imaging for the routine diagnosis and treatment of IV disc herniations.

Surgeons at the DVSC believe that any patient that has lost coordinated motor function (unable to walk across a room) should be evaluated promptly for possible CT/myelogram.

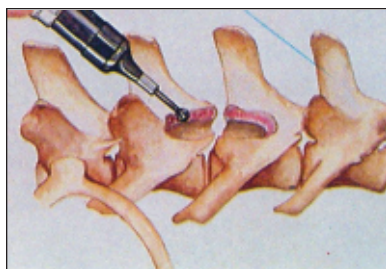
If indicated, surgical decompression of the spinal cord should be performed in order to achieve the best possible outcome.

Our surgeons can be paged after hours at 214.246.2819. If a page is not returned within 15 minutes, please call 214.289.3215.

surgery for an acute cervical or T-L disc herniation with preoperative deep pain sensation is well above 90%.

Patients suffering from chronic disc

Below: Hemilaminectomy.



Left: Post spinal cord decompression.

Below: Herniated disc.



herniation can generally be returned to an ambulatory status, but often some degree of incoordination and occasional weakness may be present for the remainder of the pet's life.

Patients with preoperative negative sensory status have the most variable response to surgery. In these patients the duration of time from loss of sensation (which is often unknown) until surgical decompression is inversely proportional to the clinical outcome. Basically, the longer the negative sensory status has been present the less chance surgery will result in a favorable outcome. Returning negative sensory patients to an ambulatory status ranges from 0-50%, based on the results of several retrospective studies.

Some surgeons feel the prognosis drops below 25% if the negative sensory status has been present for more than 12 hours, and rapidly approaches 0% after 24 hours of loss of sensation. Surgery is still the best option for the negative sensory pet; however a client should be counseled on the severity of the disease.

*continued on page 4 . . .*

## Candidates for Advanced Spinal Imaging and Neurosurgery

Patients that should receive advanced spinal imaging (Myelogram/CT/MRI) and possible neurosurgery include:

- ✓ Neck/back pain, even without neurological deficits, that have not completely resolved within 14-21 days of conservative treatment (confinement, steroids, muscle relaxers and pain medication)
- ✓ Any patient with paresis (proprioceptive deficits and uncoordinated motor function-ataxia)
- ✓ Any patient without motor function (paralysis)

## Our Doctors

Robert D. Barstad, DVM, MS  
Small Animal Surgery

Scott G. Bertrand, DVM  
Diplomate American College  
of Veterinary Surgeons

Joanne N. Franks, DVM  
Diplomate American College  
of Veterinary Surgeons

Darryl E. McDonald, DVM, MS  
Diplomate American College  
of Veterinary Surgeons

Robert M. Radasch, DVM, MS  
Diplomate American College  
of Veterinary Surgeons

H. Fulton Reaugh, DVM, MS  
Small Animal Surgery

Brent E. Wilkens, DVM  
Diplomate American College  
of Veterinary Surgeons

Katherine L. Wells, DVM  
Small Animal Surgery



# PREVENTATIVE MINIMALLY INVASIVE LASER DISC ABLATION

The DVSC is the first private referral center in the United States to offer Preventative Minimally Invasive Laser Disc Ablation, an exciting new treatment modality to help prevent IV disc ruptures.



Left: Radiograph of spinal needles.

Below: Spinal needle placement for laser disc.



## New: Preventative Minimally Invasive Laser Disc Ablation

Under anesthesia, spinal needles are placed percutaneously using fluoroscopic guidance into the nucleus pulposus of discs T10 – L4. A laser fiber optic filament is passed through the spinal needle into the nucleus and a Holmium: YAG laser is used to provide the energy. The Holmium: YAG laser wavelength is strongly absorbed by water resulting in the vaporization, coagulation, and shrinkage of the nucleus pulposus without penetration or damage to other surrounding tissues, such as the spinal cord.

Laser disc ablation has the same effect as surgical fenestration but is a minimally invasive procedure with very mini-

mal patient discomfort and morbidity. Intradiscal pressure is reduced by removal of the nucleus. **This technique should be considered a preventative procedure in high risk breeds for developing a disc rupture. It cannot be used for a disc that already has ruptured.**

In the most recent study, the procedure was effective in preventing disc herniation in 95% of patients (Bartels KE, Higbee RG, et al. Outcome of and complications associated with prophylactic percutaneous laser disc ablation in dogs with

thoracolumbar disc disease: 277 cases 1992-2001). Laser disc ablation has been

performed for many years in human medicine as well as at Oklahoma State University.

## To be continued

Please stay tuned for our next issue, coming

Spring 2007, which will address insights into additional common neurosurgical diseases, including:

- ✓ Spinal Fractures and Subluxations
- ✓ Wobblers Disease
- ✓ AA Luxation
- ✓ Neurosurgical Physical Therapy

Below: Patient in CT scanner.



# DVSC

Dallas Veterinary Surgical Center

## Dallas

4444 Trinity Mills Rd., Suite 203  
Dallas, Texas 75287  
T 972.267.8100  
F 972.267.8700

## Mesquite

4651 N. Belt Line Rd.  
Mesquite, Texas 75150  
T 972.226.3399  
F 972.226.0800

## Plano

10225 Custer Rd.  
Plano, Texas 75025  
T 214.667.2233  
T 214.667.2250

## Southlake

2340 W. Southlake Blvd.  
Southlake, Texas 76092  
T 817.379.5444  
F 817.379.0222